DOCUMENT RESUME

ED 241 545 TM 830 799

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TITLE Testing Teachers' In-Class Instruction and Measuring Change Resulting from Staff Development.
PUB DATE Sep 81
NOTE 64p.; Prepared for the National Teacher Examinations Policy Council, Princeton, NJ.
PUB TYPE Viewpoints (120) -- Reports - Research/Technical (143) -- Information Analyses (070)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Classroom Observation Techniques; Elementary Secondary Education; Measurement Techniques; Performance Tests; *Staff Development; *Teacher Certification; Teacher Education; Teacher Effectiveness; *Teacher Evaluation; *Time Management

ABSTRACT

Teachers' knowledge of effective use of time research can be examined via a paper/pencil test; however, the degree to which teachers used the identified effective practices can only be observed and recorded. What is proposed here is an objective observation of teaching practices. Based upon research findings, criterion levels would be established for the percent of time particular activities or interactions should occur. For example, one study indicated that effective teachers spend 15 percent of their time on organizing/management activities, 50 percent on interactive on-task activities, and 35 percent on non-interactive on-task activities. After an observation, teachers would receive specific recommendations regarding behaviors to be increased or decreased. They would be provided assistance in changing these behaviors. The test would be a post-observation to see whether teachers' behaviors met the criteria for effective use of time after a period of time in which to practice in the classroom. This type of program has been implemented on a large scale. The model it provides has implications for teacher education and certification. (BW)

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TESTING TEACHERS' IN-CLASS INSTRUCTION AND MEASURING CHANGE RESULTING FROM STAFF DEVELOPMENT

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September 1981

TESTING TEACHERS' IN-CLASS INSTRUCTION AND
MEASURING CHANGE RESULTING FROM STAFF DEVELOPMENT

The perspective this paper takes is that teachers need to know how to use time effectively in the classroom. Research on teaching during the 1970's and 1980's has provided some good guidelines for effective use of time.

Teachers' knowledge of effective use of time research can be examined via a paper/pencil test, however, the degree to which teachers use the identified effective practices can only be observed and recorded. What is proposed here is an objective observation of teaching practices. Based upon research findings, criterian levels would be established for the percent of time particular activities or interactions should occur. Teachers would then receive specific recommendations regarding behaviors to be increased or decreased. They would be provided assistance in changing these behaviors. The test would be a post-observation to see whether teachers' behaviors met the criteria for effective use of time after a period of time to practice in the classroom.

Teacher as Learner

Are teachers stuck with old behaviors? Are they so burned out they are unwilling or unable to improve their teaching skills? The popular press would have us think so. During the past four years, the staff at the Teaching and Learning Institute has provided training to over 200 inservice secondary teachers. This experience has expelled several myths about teachers as learners. Many teachers do seek training to improve skills they perceive need to be improved.

Even non-volunteer teachers improve skills when recommendations are based upon objective observations of their performance. Teachers near retirement can and do change behaviors when given specific recommendations based upon their present performance and student needs, i.e., "Old dogs can learn new tricks". However, the nature of the training must be practical and meet teacher felt needs.

In many parts of the country, the teaching staff has become quite mature. The vast majority of practicing teachers earned their degrees in the 1940's, 1950's and 1960's. Most teachers have their life credentials and many have earned masters degrees. Therefore, any training they seek must meet their perceived needs rather than fulfill mandated requirements. Several social and educational phenomena have pressed teachers to improve skills or develop new skills. During the 1970's, for the first time, teachers were confronted with an increasing number of Asian and Hispanic students with limited English speaking skills, mainstreamed handicapped students, and many students lacking basic skills in reading, writing, and mathematics. These students could not function satisfactorily in the usual English, mathematics, science, or social studies curriculums, and special classes were formed for students needing remediation.

As student population and school budgets dwindled, many of the remaining teachers found themselves required to teach basic reading, writing, and math. Subjects considered frills such as Latin, Greek, philosophy, or tennis, were eliminated from programs. In order to meet the needs of the students in the schools, teachers needed to learn new skills. What should a teacher know in order to teach the children in schools today?

Research in elementary and secondary schools during the 1970's and 1980's has identified some effective teaching practices. Most of this research focused upon the use of time in classrooms. The Beginning Teacher Evaluation Study (BTES) reported by Fisher and Berliner was especially useful. They found a relationship between student learning and the amount of time allocated to reading and mathematics, the percent of time students actually spent on task, and the appropriateness of the tasks assigned to students. From their data, they could suggest amounts of time to spend in reading and mathematics and describe specific activities that occurred during reading and math instruction.

A very carefully designed study by Leinhardt, Zigmond, and Cooley (1981) contributes significantly to our understanding of the salient reading activities in classrooms that serve students with reading problems. They say,

> "Students who are at the beginning stages of reading need to be taught <u>how</u> to read. On the average, the teachers in this study spent only 16 minutes per day in these kinds of instructional contacts, and in fact, of that time, 14 minutes per day were used to give general reading instructions, one minute per day was spent waiting while a student completed a reading task, and only one minute per day was used to explain or model correct elements of reading. Teachers must organize <u>their</u> time so that these instructional activities are increased.
>
> ...teachers must be vigilant in their search for children who are losing out. While the average off-task rate was 15%, some students were off-task more than 30% of the time. While the average amount of teacher instruction was 16 minutes a day, the range was from 1.4 minutes per day to 35 minutes per day. While the average time spent in silent reading was 14 minutes per day, some students spent no time at all reading silently. Fortunately, teachers can dramatically change the experience and the performance of those students who seem to be losing out without changing things for those who are not."

The work of Brophy and Evertson (1974) in elementary schools, and of Evertson and Emmer (1980) in junior high schools provides excellent suggestions for how to plan and organize the first day of school. The Evertson and Emmer study focused upon an organization of 102 junior high school English and math classrooms. Several characteristics differentiated more and less effective teacher/managers. In classrooms where there was less student misbehavior and more student gain through the year:

- Teachers made rules, consequences and procedures clear on the first day. This included teachers monitoring the students and following through with consequences for those who did not comply.
- Teachers established a system of student responsibility and accountability for work on the first day.
- Teachers were skillful in organizing several instructional activities.

The achievement levels of students must also be taken into account when teachers plan lessons and select materials. Tholen (1976) strongly suggests that science teachers compute the readability of their text. If the readability is above the students' reading level, the teacher must teach the science concepts by other means, e.g., developing a working vocabulary of key concepts and continually checking for understanding. It is important to link the new information to what the student already knows.

The variation in amount of time by achievement groups was reported by Evertson (1980). On the average, low-achieving junior high students were engaged 40% of the time in academic activities compared with 85% engaged time for high-achieving students. Low-achieving students experienced less variation in the activities that

occurred during the class period and had more "dead time" (nothing happening) than did the high-achieving students.

Even though the high-achieving students are more inclined to be engaged in academic tasks, it is of considerable importance to allocate sufficient time and effort to working with low-achieving students who may not be so inclined. Stallings (1975) reported that low-achieving third graders in the Follow Through study prospered more from an increase in time spent in reading and math than did the higher-achieving students. Caution: for all students, there is a point at which more time does not produce more learning. Such curvilinear effects have been reported by Soar (1978).

A study by Stallings, Cory, Fairweather, and Needels (1978) provided useful information regarding teaching basic reading skills in secondary schools. The study identified effective strategies that teachers used in these classrooms. These included:

Organizing / Management Activities (15%)

- Take role
- Make announcements
- Make clear expectations for quality and quantity of work
- Clarify behavioral expectations
- Pass papers or books (out and in)

Interactive On-Task Activities (50%)

- Review / Discuss previous work
- Inform / Instruct (demonstrate / give examples)
- Question / Check for understanding
- Reteach small group (if necessary)

- Read aloud / Develop concepts

Non-Interactive On-Task Activities (35%)

- Written work
- Silent reading
- Teacher monitoring / guiding

Interactive Supportive Instruction

During the study of how teachers allocated time to various classroom activities, it became clear that teachers who were interactive in their teaching style had students who achieved more in reading. This interactive style included providing oral instruction for new work, discussing and reviewing students' work, providing drill and practice, asking questions, acknowledging correct responses and supportively correcting wrong responses (Stallings, 1980).

It was important that teachers try to include all students in classroom discussions and review sessions. The effective teachers did not call upon volunteers but rather called upon a particular student. When volunteers are solicited, the same people take part each day and many students may not be involved at all. When calling a student by name, it is important to ask a question at a level where the student is most likely to be successful. However, if the student gives an incorrect response, it is important that the instructor stay with that student and rephrase the question or give a clue so that the student can succeed and give a correct answer. A wrong answer can provide an opportunity for the teacher to clarify and reteach, if necessary. It is important in secondary remedial classrooms that wrong responses are handled in a supportive manner since research indicates these students do not thrive on demeaning experiences of failure.

Mathematics and Science Instruction

The interactive type of instruction is important when teaching subjects other than remedial reading. Good (1980) found that junior high school students learned more mathematics in classrooms where teachers were active in their instruction. These teachers made assignments and provided information in a clear manner. They asked students appropriate questions and provided immediate feedback to student responses. Unfortunately, many teachers of general math students are not active in their teaching style. In a study of math classes in 11 schools, Stallings and Robertson (1979) found that teachers more often told general math students to do written workbook assignments in class and less often gave them instruction or review of seatwork than they did students in geometry or calculus classes. In classrooms where students are more involved, more achievement occurs. Students in general mathematics or pre-algebra were off-task significantly more often than were students in algebra II, geometry or calculus classes.

Eleven of the teachers in the study were observed in both lower and advanced math classes. When the observations of the teachers were compared, they found the same teacher would be active with advanced classes and not active with lower classes. In the advanced classes, teachers were more likely to ask clarifying questions, e.g., "Do you understand?". These students received active instruction 30% of the time and review of work 23% of the time. (See Table 1.)

In most cases, programmed workbooks were used with low-achieving students. Students worked at their own pace with the

teacher grading papers or monitoring. Only 14% of the time was spent in providing instruction or explanations to Type I classes (See Table 1). They received review only 8% of the time. Students raised their hands to receive help. Some students received help--others waited a long time or gave up. To stay on-task, these low-achieving students need more consistent instruction from a teacher. Programmed workbooks will not help them learn the mathematical relationships necessary to cope in life. It is a teacher's responsibility to help students and to make connections. A teacher can see in students' faces whether or not they understand. If they don't, a teacher can select another example, perhaps from the student's background, or explain the problem in another way on the chalkboard. The most important finding in this research is that teachers need to actively teach for about 50% of the class time.

Table 1
Percentage of Student Time Spent in Activities
for Three Types of Mathematics Classes*

Variables	Type I	Type II	Type III
Instruction	14.0%	25.0%	30.0%
Review	8.0%	21.0%	23.0%
Written Assignments	34.0%	15.0%	11.0%
Teacher Management/ No Students	24.0%	20.0%	15.0%
Social Interactions	11.0%	13.0%	13.0%
Students Uninvolved	11.0%	6.0%	4.0%
Discipline	4.0%	.2%	.05%

Type I = General Math or Pre-Algebra
Type II = Algebra I or Geometry
Type III = Algebra II, Trigonometry, or Calculus

*Some categories are overlapping and the columns will not sum up to 100%

Characteristics of Good Teachers

From this research evidence, it appears that good teachers should (1) know the readability of the text, (2) know the reading achievment level of their students, (3) select appropriate materials, (4) make clear the expectations from the first day onward, (5) allocate sufficient time to reading instruction and review, (6) ask direct questions and clarifying questions, (7) provide a supportive and guiding environment, (8) provide time for oral and silent reading, and (9) focus attention on the total group, small groups, and individuals part of each class period.

The justifications for including these characteristics is based upon empirical research. The findings also have considerable face validity. They make sense to teachers. All of the data reported were obtained from correlations and regression analyses. To learn whether student achievement is truly affected by these teaching processes, experiments were needed. Brophy and Evertson (1974), Good and Grouws (1979), Crawford, et al. (1978), and Stallings, Needels, and Stayrook (1979) carried out such experiments.

Training Experiments

The experiments differed in several ways. Brophy and Evertson only offered experimental elementary teachers a list of written suggestions. The suggestions were very specific. Their teachers changed behaviors and the children gained more in reading than did control children in classrooms of teachers who did not have the written materials.

Crawford's group provided one group of elementary teachers with materials only, another group with materials and four training

sessions, and a control group received some unrelated materials. The materials-only group had students who made the most achievement gain. This may be explained by the fact that some of the third-grade teachers in the study had reasonably good teaching skills when the study began. The materials and/or the training simply improved the skills.

Good and Grouws provided experimental teachers with a two-hour instruction session which included demonstrations of their mathematics program. This was followed by direction for using a manual which gave specific guidance for conducting the lessons. Teachers then had an opportunity to use the program for two weeks. They returned for a two-hour question and answer session. At the end of the semester, these Junior High mathematics teachers were observed to see whether they were implementing the program. The researchers found that 80% of the teachers were implementing the program acceptably. What's more, the experimental teachers' students gained 20% more than did the control teachers' students.

The Stallings, Needels and stayrook study differed in that it occurred in secondary schools. The training was based upon each teacher's profile of observed behaviors and a set of specific recommendations for behavior change. Many of these teachers did not have some of the specified characteristics of effective teachers in their repertoire. They had been taught the content of their subjects but rarely were they trained to teach effectively. Few high school teachers know how to group students, check the readability of texts, or teach basic reading skills. Few teachers know how to provide interactive instruction where all children are assisted to take part. The curriculum for the "Effective Use of Time" model was based upon the very specific

findings from the study of Teaching Basic Reading in Secondary Schools. This model was developed as follows:

First, the variables which were identified as being effective were translated into recommendations for teachers. Fortunately they had considerable face validity and it was not difficult to form statements that were understandable by teachers. Our hypothesis was that teachers could and would learn a new set of behaviors and that these behaviors would be related to student achievement gains and absence rates, if certain conditions prevailed:

- Adequate time was provided to introduce the program to administratos and teachers, and to make clear the links between theories of learning and the research findings.
- Time, place, and length of meetings were convenient for teachers.
- Some type of incentive was provided: release time, stipend, or credit.
- Recommendations for behavior change were based upon research findings from classrooms of students similar to the students in their school.
- Teachers were informed that their behavior change would be measured at the end of each semester and that only they would received the information.
- Teachers' observation profiles were confidential and provided a basis for staff development rather than evaluation.
- Teachers could select one or two of the changes recommended on the profile to try in their classrooms during each of the 5 weeks of the program.
- Each week, time was provided to discuss what teachers found they could change and what was difficult to change.
- Group size was kept small enough so that, each week, the teachers' problems of implementing the recommendations could be received.
- Training leader encouraged teachers to share their techniques for effectively managing time and student behavior, and for working toward more effective administrative policies.

- Training leader was supportive of the teacher's effort to change; and (while recognizing problems with students, parts, and administrators) established a forum where solutions to the problems would be generated rather than just airing the problems.

- Training leader requested teachers to do some homework activity to increase awareness of the class structure, e.g., keeping a seating chart of to whom the teacher speaks during the class period or of which students are off-task during the beginning, middle, and end of period. Teachers could then evaluate whether class activities were appropriate or student seating was appropriate.

- Training leader acted as a role model for teachers, i.e., started on time, was clear in expectations, kept on-task, distributed interactions to all participants, was supportive and guiding, respected confidentiality, and respected individual teacher differences (experience, training, school environment, personal attributes).

Every teaching and learning situation has a curriculum and a delivery system. The curriculum that we developed was based upon research findings. A delivery system was a small group problem-solving process. A series of five workshops were planned for two-and-one-half hours once a week. These were held, for instance, on five consecutive Tuesdays in the fall. The size was limited to six participants in each session. This amount of time allowed approximately 25 minutes per person to go over their week's efforts to change behavior and to receive feedback and guidance from their peers and from the leader. Essentially this is a mastery learning model (see Table 2).

The quasi-experiment was conducted in the 1977-1978 school year. Secondary teachers who taught basic reading in eight urban and rural school districts were introduced to the study through meetings arranged by their compensatory education director. The purpose of the study was explained and volunteers for the study were requested.

A STAFF DEVELOPMENT MASTERY LEARNING MODEL

PRETEST

- Observe teachers
- Assess what is needed from teacher observation profiles
- Start where they are

INFORM

- Link theory, practice and teacher experience
- Provide practical examples from classroom situations

ORGANIZE AND GUIDE PRACTICE

- Provide conceptual units of behaviors to change
- Support and encourage behavior change
- Assess and provide feedback
- Help integrate into scheme

POSTTEST

- Observe teachers
- Provide feedback to teachers
- Provide feedback to trainers

Table 2

The amount and kind of intervention in the classroom was described as was the series of workshops. From the eight districts, 52 teachers volunteered. (Some of those were strongly encouraged by their administrators to participate.)

Design

One-half of the teachers in each district were selected for training. The other teachers served as a control group. The groups were matched for the entering ability of their students and the teachers' credentials to teach reading. We found that only 21% of the secondary teachers who had been assigned to teach basic reading classes had a special credential to teach reading. Indeed, 34% had no formal training to teach reading (see Table 3). Most teachers held more than one credential and were trained to teach music, art, speech, psychology, physical education, typing, English, literature, drama, Spanish, theology, science, or career education (see Table 4).

Table 3
Summary of Teachers' Training and Experience
(n = 47 teachers)*

Type of Training	Percent of Teachers
Have a specialty in teaching reading	21.3%
Attend workshops	53.2
Take college courses	48.9
Have an elementary credential	19.1
Have no formal training to teach reading	34.0
Also teach other subjects	72.3
Experience	**Range**
Total years teaching	1-31 years
Years teaching reading	1-12 years

*47 of the 52 teachers responded.

Table 4
Credentials for Teaching by Subject Area

Credentialed Subject	No. of Teachers
Reading	10
Literature	5
Writing	3
Grammar	2
Language Arts	4
Speech	3
English	24
Spanish	2
Theology	1
Music	3
Drama	4
Art	3
Career education	1
Commerce	1
Business	1
Physical education	4
Aviation	1
Ethnic studies	1
Social studies	16
History	12
Political science	1
Psychology	2
Life science	2
Biological and physical sciences	2
Math	1
State requirements	1

Of the 47 teachers responding to a survey, 34 continued to teach classes other than reading. Teaching experience varied from 1 year to 31 years. 1977-78 was the first year of teaching reading for 11 teachers, while seven had been teaching reading for 10 or more years. After being assigned to teach reading the teachers reported feeling willing but inadequately prepared. Many had sought additional

training. Fifty-three percent of the teachers attended some workshops on reading instruction and 49% had taken some college courses. Although these variations in teacher preparation were of interest, because of our sample size we could only control for the presence or absence of a reading credential and student achievment level.

All teachers were observed for three class periods in the fall. Observers were trained to an 80% reliability on all codes. These fall observations served as the pretest data and were the basis for recommendations to teachers. From the 26 treatment teachers, four groups were formed initially. In the Fresno/Tulare group there were eleven teachers. This proved to be too large a group to allow for all teachers to participate in each meeting. In addition, the Tulare teachers felt burdened at having to drive to Fresno for the meetings. Consequently, we separated the groups and met with each group in its own location. (This experience helped to form our opinion regarding group size and convenience for teachers.)

From the observation data, profiles of behavior were prepared for each treatment teacher. Using findings from the correlational study, a set of recommendations were made for each teacher based upon the reading level of his or her students. At the first workshop, the findings from the correlational study were explained and linked to learning theories. The recommendations for each teacher were then interpreted privately. Each teacher was asked to select two or three of the recommendations they were willing to try the next day in their classrooms. Teachers made a record of their

objectives as did the trainer. The trainer made clear the accountability process and mentioned the post observations to be conducted at the end of each semester.

The five workshops were conducted one week apart, usually from 3:30 - 6:00 p.m. Each of the four remaining sessions started with the questions, "What did you try last week?" and "How did it work?". If a teacher's attempt at making a change did not succeed, other teachers offered suggestions of methods they used for achieving that particular objective. It was made clear that each teacher was operating in a unique situation. Thus, class size, room assignments, and school policies could affect how recommendations were carried out. The teacher trainer listened to the teachers' questions and problems, and then facilitated the group's problem solving process. The leader kept the group focused on the topic of the workshop and explained why specific classroom processes seemed to be effective with secondary students needing remediation. At the end of each workshop the teachers were asked to select another behavior from their profile that was recommended for change and to try it in the classroom the next day. They were also asked to read some background material for the next workshop.

Analysis of Teacher Change

Once the workshops were delivered and the pretest and posttest data were collected, the $100,000 question was: Did the workshops make a difference in how the teachers performed in their classrooms?

Mean frequencies for each variable used on the profiles were computed for the control and treatment groups. A report of how each group performed on critical variables is displayed on Tables 5, 6, 7, and 8. Each group was compared with a grand mean. The grand mean was derived from 43 classrooms observed in the spring in Phase I and 44* classrooms in spring, Phase II. This mean reflects the frequency or percentage of the behaviors that were correlated with student gains in the classroom where they occurred. Our recommendation to teachers in fall, Phase II was to increase or decrease a particular behavior so that it was above or below the spring, Phase I mean depending on whether the variable was positively or negatively correlated with gain.+ In some cases the teachers were already performing the activity in an effective manner so the recommendation was to continue the activity as they were doing. If the treatment or control group of teachers was performing above or below the mean as recommended on a variable, they were given one point. (This is shown on Tables 5, 6, 7 and 8 in terms of a plus.) In this manner an implementation score was developed for each group. Five Minute Interaction variables (F) are reported in terms of frequency of occurrence during 300 interactions recorded per class period. Snapshot variables (S) are reported in terms of percentage of time

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* Seven control teachers and one treatment teacher dropped from the sample during the school year.

+ Recommendations were based upon spring, Phase I, but evaluation was based upon the grand mean.

observed during 5 snapshots per class period. This is a descriptive analysis wherein trends and meaningful differences are examined, rather than a statistical analysis.

Interactive Instruction

As previously stated, we encouraged teachers to decrease time taken to make assignments and to increase instruction time. This instruction time variable is a composite that includes instruction using any materials as well as discussions and drill-and-practice activities. This total instruction time (S6, 7, and 8) was observed to have increased slightly for the treatment group from 13% to 15%. The control group went from 11% in the fall to 8% in the spring. The instruction interactions (45) stayed above the mean for the treatment group but steadily declined for the control group (see Table 5).

An instructional method includes the presentation of new material and what the teacher does after giving instruction or presenting the new material. This procedure varies. We encouraged asking short direct questions and giving immediate supportive feedback to the student's response. Students who have a long history of failure need consistent support and many opportunities to experience success. The number of questions treatment teachers asked about reading (F17) and the students' response rate (F25) decreased slightly toward spring but remained above the mean. Out of an average of 31 questions teachers asked per period in the spring, students responded an average of 29 times. We encouraged the teachers to distribute the questions among the students, choosing

Table 5

Interactive Instruction

		Spring Grand Mean	More or Less*	Treatment Teachers (N=25)				Control Teachers (N=19)			
				Treatment Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$	Control Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$
S6, 7,8	Instruction activities	12%	More	+	13%	15%	15%	0	11%	9%	8%
F45	Instruction interactions	54.3	More	+	66.3	44.3	58.3	0	53.6	50.0	44.4
F17	Teacher questions: reading	31.1	More	+	37.2	33.0	31.7	0	40.2	33.9	25.8
F25	Student response: reading	28.8	More	+	33.3	29.0	29.1	0	34.8	29.2	25.3
F71	Praise/support reading or task	12.9	More	+	12.6	13.8	15.2	0	13.4	12.4	11.6
F76	Corrective feedback: reading	12.7	More	+	10.4	10.8	13.0	0	16.6	12.1	12.4
F110	Probing questions	.41	More	+	1.3	2.2	3.0	+	2.8	1.5	2.0
F136	Teacher interacts: different student	21.9	More	+	26.0	20.9	23.1	0	25.8	21.0	21.9
S10	Tests or quizzes	1.2%	More	0	.2%	1.8%	1.4%	+	.4%	.8%	1.7%
F43	Students reading aloud	17.3	More	0	10.7	13.8	13.8	0	14.4	13.7	15.1
S4	Reading aloud activity	5.8%	More	0	3.9%	1.9%	2.3%	0	3.4%	5.1%	5.7%
F94	All interactions: reading	202.1	More	+	218.7	208.0	199.0	0	244.1	209.0	181.7
				Total + 9				Total + 2			

S = Snapshot variables on percentage of time observed.
F = Five minute interaction variables - frequency out of 300 interactions.
*More = treatment teachers were directed to do more of these activities than the grand mean.
Less = treatment teachers were directed to do less of these activities than the grand mean.

questions each student could most likely answer. We discouraged calling on volunteers since the same students are likely to always respond and get the feedback. Students need an equal opportunity to respond since feedback is positively correlated with achievement. Data from Table 5 (F136) indicates that teachers in the treatment group called on different students 23 times in the spring (a little less than in the fall). However, out of the 31 questions asked, a different student was asked 23 times. Note that all of these variables are above the grand mean in the treatment group and below the mean in the control group.

When a teacher continues to question one student, it may indicate that the student gave an incorrect response and the teacher was asking probing questions (F110). This is a supportive kind of feedback that is low in frequency but was related to student gain in Phase I. It more than doubled in the treatment group while it decreased in the control group. The message from the teacher to the student in this variable is, "The answer isn't right but I think you (the student) can get it, if I (the teacher) ask the question differently". The main idea is to assist students to respond correctly so that positive supportive praise or acknowledgement can be given. There was also a positive correlation between praise and support with achievement gain and attendance rate in Phase I. The treatment teachers increased the frequency of offering praise and acknowledgement (F71) and corrective feedback (F76, F110), while the control teachers declined on these variables.

In order to give students a daily opportunity to succeed we suggested giving short quizzes (5-10 items) that could be scored easily. The quizzes should be designed to allow the students to succeed at a rate of 80-100%. Students who have seldom received 100% need chances to succeed at this level. Success becomes a motivating factor for students who have stopped trying. Although there was a considerable increase in the number of quizzes (S10) being given in both the treatment and control groups from fall to spring, the number of quizzes observed in the treatment group in the spring was still fewer than the grand mean.

In addition to the instruction of how to teach new material through drill and practice and positive support, we suggested that the teachers have the students in the low reading groups read aloud. Hearing as well as seeing the words is helpful to these students. Many teachers were reluctant to try this since they felt the students would be embarrassed. One teacher who had been teaching 29 years tried grouping and having students read aloud. He reported that he and the students enjoyed the process--"It seemed to break the monotony". Table 5 indicates that although the treatment did increase the number of reading aloud (F43) interactions, they were still lower than the grand mean. The percent of time (S4) went down slightly. This was a disappointment but we conclude that it is difficult to get teachers to try something they have opinions against and haven't experienced previously.

The reading interactions comprise two-thirds of the 300 interactions recorded for the treatment groups (F94). We would have preferred to see this increase rather than decrease, but it is higher for treatment teachers than for the control teachers (although the control group started high in the fall). One explanation for the lower number of reading interactions in the treatment groups may be that the number of interactions centering on other subject areas--current events, social studies, science--increased in the spring. These interactions are coded as task-oriented when subject matter other than reading is discussed.

On eight of the twelve interactive instruction variables the treatment group is above the grade mean and the control group mean. Although the reading aloud variable was not increased to the degree we might hope, we conclude this part of the treatment was effective.

Non-Interactive Instruction

In Phase 1, the data suggested that more gain was achieved in classrooms where there was more interactive instruction and where several activities occurred during one period. The no-gain classrooms in Phase I tended to have a high rate of written assignment and silent reading and not much interaction with the students. Thus we recommended a reasonable balance between these activities: encouraging more reading aloud, more discussion and reviewing, less silent reading, and fewer written assignments. The snapshot variables on Table 6 indicated that both groups were above the

Table 6

Non-Interactive Instruction

				Treatment Teachers (N=25)				Control Teachers (N=19)			
		Spring Grand Mean	More or Less *	Treatment Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$	Control Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$
S3	Silent reading	13.8%	Less	0	15%	13%	16%	0	11%	12%	15%
S9	Written assignments	20.9%	Less	+	24%	24%	18%	0	24%	26%	23%
F122	Teacher without students	41.0	Less	+	17	25	36	0	24	36	47
S2	Teacher: manager--no students	27.8	Less	+	21%	24%	22%	0	21%	26%	29%
			Total +	3				Total +	0		

S = Snapshot variables on percentage of time observed.
F = Five minute interaction variables--frequency out of 300 interactions.
*More = treatment teachers were directed to do more of these activities than the grand mean.
Less = treatment teachers were directed to do less of these activities than the grand mean.

grandmean on silent reading (S3) in the spring. Time spent on written assignments (S9) decreased for the treatment group and stayed about the same for the control group.

In classrooms where there were high rates of silent reading and written assignments we found there were also high rates of teachers doing tasks like grading papers or making lesson plans during class. To change this pattern we encouraged teachers (especially those with students in the low or medium groups) to stay involved with the students and cautioned them not to grade papers, prepare lessons, etc. during class. Results indicate that on variables describing situations where teachers were not involved with students (S2 and F122), the treatment teachers increased but were below the grand mean. The control teachers increased this behavior to considerably above the mean. In fact, by springtime, control teachers were not involved with students 29% of the time when the snapshots were recorded. Thus, the treatment group was lower than the grand mean and the control group mean on three of the four non-interactive instruction variables.

Off-Task Activities

In other research on teaching (Evertson, Anderson and Brophy, 1978; Stallings and Kaskowitz, 1974; and Good, 1978), the variable most often found to be related to achievement gain is the time students spend on-task. In secondary classrooms where the reading period is likely to be only 45 minutes, it is of utmost importance to reduce the off-task behavior and to increase the on-task behavior.

The most striking difference we found in Phase I between the no-gain classrooms and the gain classrooms was in the amount of time teachers spent talking about behavior, the number of social comments, and students or teachers not involved in the process of reading. Thus, in the workshops we focused considerable effort on techniques for reducing off-task behavior and increasing on-task behavior. Table 7 suggests that workshops had an effect. In variable F56, social comments, the treatment groups dropped in the winter and increased slightly in the spring, but overall it was lower than the grand mean. The control groups started slightly lower in the fall and increased in winter and increased dramatically in the spring. Given teenagers and springtime, the increase is not surprising. Still, the treatment group teachers were able to hold the socializing down.

The treatment teachers' comments on students' behaviors (F96) were reduced by one-third. In the fall the treatment teachers made an average of 9.6 statements about behavior out of 300 statements during the class period and by the spring this had dropped to 5.9. The control teachers started at 6.7 and increased slightly to 7.5.

Students' non-involvement in tasks (S-12, S-13) increased in the treatment group, but remained below the grand mean of 11%. The control group increased from 5% to nearly 14% in the spring. This means that when the spring observations were made some student or students were either chatting or not involved in any activity (i.e., staring out of the window) 14% of the time.

Table 7

Off-Task Activities

		Spring Grand Mean	More or Less*	Treatment Teachers (N=25)				Control Teachers (N=19)			
				Treatment Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$	Control Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$
F56	Social comments	5.3	Less	+	2.2	1.9	2.9	0	1.5	2.6	8.1
F96	Interactions: behavior	8.4	Less	+	9.6	5.7	5.9	+	6.7	7.6	7.5
S12,13	Students uninvolved in tasks	11.4%	Less	+	4.5%	5.3%	9.1%	0	5.1%	4.7%	13.9%
F135	Class intrusions	2.6	Less	+	2.7	3.1	2.1	0	2.6	2.4	3.3
				Total + 4				Total + 1			

S = Snapshot variables on percentage of time observed.
F = Five minute interaction variables--frequency out of 300 interactions.

*More = treatment teachers were directed to do more of these activities than the grand mean.
Less = treatment teachers were directed to do less of these activities than the grand mean.

Other events that take teachers and students off-task are intrusions from outside the class. There are many reasons why people enter the classroom and stop the activities: collecting absence data, taking students from class for meetings, school announcements, class photos, purchasing tickets, etc. Phase I data revealed a negative relationship between outside intruders and student gain. Limiting the number of intrusions into the teacher's instructional time is a school-level issue which teachers cannot control. While we made teachers aware of the finding regarding intrusions, there was little they could do about it. However, the rate of intrusions in treatment classes diminished slightly in the spring and increased for the control group (F135).

Organization and Grouping

The time spent in organizing and managing the classroom is time spent off the task of teaching reading. However, it is of utmost importance that the classroom is well organized; otherwise it will not function smoothly.

In our Phase I study, we found that in all three gain groups the teacher spent less time making assignments and more time instructing the students than did the teachers of no-gain classes. Thus, we encouraged the treatment teachers in Phase II to be effecient when making assignments, e.g., write assignments for the week on a ditto sheet in student folders. By all means let the students know what to do when they finish an assignment. The message was, have a known agenda from the moment a student walks

in the room until the period ends.

The observation data indicate that the percentage of time spent making assignments (S5) went down slightly for the treatment group and stayed the same for the control group (see Table 8). The number of interactions about assignments and organization (F120) increased somewhat for the treatment group but remained below the grand mean. The control group increased by 20 interactions from fall to spring. The number of student comments about assignments (F108) decreased for the treatment group and increased for the control group.

Data shown in Table 8 indicate that a high percentage of observed time was spent by teacher and students in management activities, i.e., passing books, collecting papers, grading papers (S2 and S15). These activities decreased for the treatment group and increased for the control group in the spring.

How the teacher organizes the classroom to keep students on-task will make a difference in how well the on-task objective is accomplished. Research findings in Phase I indicate that teachers who move around the classroom monitoring students' work had more student reading gain than did teachers who allowed students to move around the room coming to the teacher for help. We encouraged our teachers to do the moving around. The treatment teachers held this behavior constant and were above the grand mean (F91) while the control teachers decreased this behavior by 50%.

Table 8

Organization and Grouping

		Grand Mean	More or Less	Treatment Teachers (N=25)				Control Teachers (N=19)			
				Treatment Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$	Control Group Implementation	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$
S5	Making assignments	4.5%	Less	+	5%	5%	3%	0	5%	4%	5%
F120	Interactions: assignments and organization	61.9	Less	+	50.7	55.0	58.1	0	57.7	78.9	78.5
F108	Student comments: assignments	8.7	Less	+	7.2	6.3	4.7	+	6.0	9.7	8.5
S2,15	Total class management	30.1%	Less	+	26%	26%	24%	0	24%	31%	31%
F91	Teacher movement	15.8	More	+	20.1	22.7	19.6	0	25.9	15.1	12.5
F48	Teacher instructs group	4.4	More	+	5.0	7.3	7.2	0	1.7	4.8	2.4
F5	Teacher individual student	78.7	Less	+	91.4	82.6	70.8	+	89.0	77.0	73.3
S119	Teacher with individual	25.0%	Less	0	23%	-	26%	+	24%	-	23%
S120	Teacher with group	16.6%	More	+	13%	-	17%	0	20%	-	16%
S121	Teacher with total class	24%	More	+	30%	-	26%	0	26%	-	22%
F105	Offer student choices	.11	Less	0	.17	.05	.16	+	.05	.12	.14
				Total + 9				Total + 4			

S = Snapshot variables on percentage of time observed.
F = Five minute interaction variables--frequency out of 300 interactions.
*More = treatment teachers were directed to do more of these activities than the grand mean.
Less = treatment teachers were directed to do less of these activities than the grand mean.

Many of the classrooms had children with different reading abilities, so we encouraged the teachers to group the students by ability. Given the findings (in Table 9) that working with one student at a time is an inefficient way to distribute the teacher's time, we recommended that teachers cut down the amount of time spent with one student and increase the time they spent working with a group. Students learn from each other in groups because the instructional time with the teacher is increased. Rather than 2 minutes of individual time they may have 12 minutes of group time with the teacher.

The data on Table 8 indicate that speaking to groups (F48) increased slightly and working with individuals (F5) decreased in the treatment group: there were an average of 20 fewer interactions per period with individuals in the spring than in the fall. There were many more interactions with one person than there were with groups. Teachers working with groups (S120) increased from fall to spring in the treatment group. When working with a group, teachers are most likely to ask one student at a time to answer a question so that interactions with individuals will be recorded even if the individual is within a small group. This may help explain the much higher rate of speaking to individuals (S119) rather than to groups.

Data for the treatment group shows that 4% more time was spent with groups (S120) in the spring than was in the fall. Less time was spent with the total class (S121) but it still was above the grand mean. Counter to our suggestion, slightly more time was

Table 9

Partial Correlations of Process Variables and

Student Reading Achievement (CTBS)

(N=36 Classrooms)

Var. No.	Interactive on Task Instruction	r	p
1	Students read aloud with teacher from workbook	.40	.007
2	Students read aloud from textbook to small groups	.59	.001
3	Students read aloud (Interaction)	.24	.08
4	Teacher instructs using chalkboard	.23	.08
5	Teacher instructs one student	-.25	.07
6	Teacher instructs small group	.22	.08
7	Teacher instructs entire group	.23	.08
8	Teacher discusses reading content or reviews seatwork	.41	.006
9	Teacher asks students questions about reading or task	.34	.05
10	Students respond to teacher's questions about reading or task	.35	.05
11	Teacher praise and support for correct responses	.29	.05
12	Teacher negative corrective feedback for wrong response	-.21	.09

Table 9 (Continued)

Var. No.	Interactive on Task Instruction	r	p
13	Teacher positive guiding corrective feedback for wrong response	.52	.001
14	Teacher skips to another student when first student's answer is wrong	-.21	.09
15	Teacher gives oral quiz	.25	.07
16	All positive interactions about task**	.24	.08
17	Students ask teacher questions about assignment	-.22	.08
18	Teacher responds to student about assignment	-.21	.09
	Non Interaction on Task Instruction		
19	Students read silently in workbooks or textbooks	-.30	.05
20	Students write in workbooks or worksheets	-.36	.01
21	Teachers work alone grading papers	-.24	.07
22	Teacher not interacting with students (doing administrative tasks)	-.23	.08

Table 9 (Continued)

Var. No.	Off Task Behavior	r	p
23	Student social interactions	-.52	.001
24	Student uninvolved in anything	-.27	.07
25	Teacher negative corrective feedback for behavior***	-.23	.08
26	All interactions related to behavior	-.23	.08
27	All negative interactions	-.29	.05
28	Students sent from room for disciplinary reason ***	-.26	.05
29	Teacher interacts with outside intruder	-.25	.07

** Could be a subset of variables 11 or 13.

*** Could be a subset of variable 27.

spent with individual students (S119). The amount of time control teachers spent with one student remained approximately the same throughout the year. The control group started in the fall by spending 7% more time with groups (120) than did the treatment group, and this decreased somewhat in the spring. Learning to work with groups is a difficult organizational challenge for most high school teachers. Secondary teachers have not been trained to orchestrate and plan for several groups to function at the same time. Those teachers who formerly had been elementary teachers found this recommendation easier to carry out than did teachers trained only to teach in secondary classrooms. More teachers in the control group had been trained as elementary teachers, explaining in part their higher fall scores for grouping.

To encourage teachers to be in strict control of their classrooms, we suggested that they keep the number of choices students make at a minimum. Much time can be wasted while students decide whether they want to do this or that. We found students were rarely allowed to make choices in either group--fall or spring (F105). The grand mean was only .11. Thus, we think this variable has little impact on student gain and is a small part of a larger picture.

Summary of Implementation Findings

For the most part, the treatment teachers changed behavior in the directions recommended in midwinter. A late spring observation indicated that treatment teachers maintained most of their behavior changes,

whereas control teachers' classes became more lax and less task-oriented.

Some of the teaching processes were more difficult than others to implement. For instance, teachers were reluctant to try oral reading activities. Just talking about the rationale and purpose of the oral activities was not enough for teachers to try this new activity in their classrooms. They might have benefited from seeing a demonstration of how oral reading can be handled effectively at the secondary level.

It was much easier for teachers to increase their instruction time, the number of questions asked, and the amount of feedback given. These were behaviors they already had in their teaching repertoire; it was only a matter of increasing their occurence.

As teachers increased their active instruction time they decreased their time spent in administrative paper work and getting things organized. Student time off-task also decreased. Overall, the treatment teachers implemented 25 out of 31 implementation variables.

Student Outcomes

The first and most important question to ask of the student achievement data is: Did the treatment group's students gain more than the control group's students? To answer this question we used those classrooms that had district reading scores available from Spring 1977 and Spring 1978. This provided a sample of 15

treatment classrooms and 14 control classrooms. The student attrition from fall to spring was quite high and the number of classrooms with sufficient student test data was reduced. Although we started the study with comparable groups we found that the treatment group was considerably lower on the pretest than was the control group (see table 10).

Table 10

A Comparison of the Reading Test Scores For The Treatment and Control Groups of Teachers

	Pretest			Posttest			Gain	
	$\bar{X}$	S.D.	Range	$\bar{X}$	S.D.	Range	$\bar{X}$	Range
Treatment (N=15)								
Standard Scores	456.04	42.01	399.7 to 538.6	510.89	41.65	433.4 to 610.0	50.45	17 to 112
Grade Equivalent	(5.7)		(4.1 to 8.3)	(7.5)		(5.1 to 10.7)	(1.8)	(.7 to 2.2)
Control (N=14)								
Standard Scores	499.79	34.75	461.3 to 590.0	537.41	38.67	476.1 to 624.8	37.90	11 to 75
Grade Equivalent	(7.2)		(5.8 to 10.2)	(8.4)		(6.3 to 11.1)	(1.2)	(.3 to 2.2)

The average for the treatment group was the grade equivalent of 5.7, and the lowest classroom scorewas 4.1. In contrast, the control group's average pretest score was 7.2 grade equivalent and the lowest class score was 5.8. The tests given in each class were selected for appropriate reading levels so that there would not be a topping out effect on posttest scores. Data on Table 9 indicate that the treatment group averaged a 1.8 grade equivalent gain. This is impressive, given they had lower performing student with whom to work. The difference in gain between the treatment and control group is significantly different ($p < .08$). The reader is

reminded that it is difficult to obtain significant differences with small samples. Nevertheless, the educational significance here is six months more gain by the treatment group than by the control group. It is very difficult to make such achievement in secondary classrooms where students have a long history of failure.

A procedure that has emerged from the work of Hedges, Gage and Olkin (1978) suggests that it is reasonable to consider the size of effects of treatment upon a group of students. Several recent reports of experiments report their effects in this manner (Glass and Smith, 1979). An analysis of variance of the two groups provided the data shown on Table 11. The effect size is one-half standard deviation. This is considered a moderate effect on student scores attributable to the training of the treatment group. When the scores of two teachers in the treatment group who had irregular attendance and did not perform the instructional processes to the degree expected were eliminated from the data, this effect size was increased to .70 standard deviation.

Table 11

Means and Standard Deviations of Gain on CTBS Scores

Group	$\bar{X}$	S.D.
Control (N = 14)	37.90	24.15
Treatment (N = 15)	50.45	31.94

Effect Size = $\frac{50.45 - 37.90}{24.15}$ = .52 S.D. units

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Possible Problems of Using Observation for a Performance Test and Research Findings as the Criteria

During our training of teachers, we learned of several school level variables that teachers said were associated with their ability to implement some of the Effective Use of Time training program. For instance, if there are many tardy students and many classroom interruptions, e.g. loudspeaker announcements, pull-out programs, etc., the teacher may have a difficult time of keeping students on task and using all the time effectively. To examine the hypothesis that school policies and leadership style would effect teacher change and program implementation, we conducted a study of eight high schools (Stallings and Mohlman, 1981). Many important relationships were found between principal leadership style, teacher morale, commitment to teaching, student absence, and vandalism.

Problematic for the observation test is that individual teachers changed their behavior more in schools where the principal was rated as being more supportive. They implemented the program better as a group where the school policy was clear, consistently enforced and arrived at collaboratively. This means that while teachers could be observed and measured for meeting specific criteria, some teachers would have a harder time changing some behaviors because of school variables. A partial solution to the problem would be to make administrators aware of the intervening variables so that they can act to assist teachers in their efforts to change.

Another possible problem is the training for the use of the objective observation instrument. There are many observation

instruments available, but whichever one is chosen, it is imperative that the data be collected reliably and processed accurately. The data need to be specific enough to guide teaching behavior (see Attachment A).

Criteria for Acceptable Behavior

Following the quasi-experiment, we proceeded to train over 200 teachers to use our Effective Use of Time program. Eventually, there were enough effective teachers identified to develop criteria for a set of variables found to be most effective in teaching secondary students. We now use these criteria to judge whether or not a teacher is implementing a variable acceptably. There are, at this time, ballpark figures and we have established a band that is acceptable rather than an exact percentage of time. See Table 12 for these criteria. During the next several years, criteria could be developed for specific classrooms and grade levels.

Other researchers are presently using this system in elementary classrooms and we expect that such criteria could be generated for the elementary grades, K-6, during the next several years.

Effects Upon Teacher Education and Certification

Using research findings to develop instructional methods would change some education courses considerably. The curriculum of some courses would be based upon research findings. The instruction process would have to allow students opportunities to develop the skills identified in that research base. Teacher supervisors would need to be objective observers. They would summarize the student teacher's observed profile of behavior, and make specific recommendations for change. Certification would come only after a teacher

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Table 12

Overall Implementation of the Training Program

	FALL	CHK	WINTER	CHK	SPRING	CHK	CRITERION
USE OF TIME VARIABLES MEAN %							
Student time spent in interactive instruction	39.34		37.74		30.33		50 ± 5
Student time spent in non-interactive instruction	27.53	✓	32.36	✓	17.66	✓	35 or less
Teachers giving assignments or organizing	10.82	✓	13.75	✓	11.51	✓	15 or less (+1)
Teachers working alone	N/A		12.68	✓	15.27		12 or less (+1)
Students off-task	N/A		16.11		20.40		10 or less (+1)
INTERACTION VARIABLES MEAN FREQUENCIES							
Teachers speak to one student	96.02	✓	95.94	✓	95.72	✓	90 ± 20
Teachers speak to small group	11.29	✓	6.37	✓	6.29	✓	5 (+25)
Teachers speak to everyone	63.16		72.04	✓	67.89		90 ± 20
Teachers speak to different students	26.43	✓	25.43	✓	25.34	✓	20 or above
Students read aloud *	2.12		10.88		9.56		20 - 40%
Teachers ask questions	22.99	✓	24.69	✓	19.07		20 or more
Students respond	24.18	✓	27.52	✓	22.62	✓	20 or more
Teachers praise or support	12.68		15.00	✓	11.28		15 or more
Teachers correct	N/A		17.70	✓	14.19	✓	10 or more
Teachers guide and correct	N/A		8.88	✓	5.66	✓	5 or more
Teachers instruct	N/A		78.38	✓	68.95	✓	75 ± 20
All reading and task statements	192.76		222.37	✓	189.89		210 or more
All assignment statements	87.09		59.65	✓	86.05		50 ± 10
All social statements	3.16	✓	5.58	✓	8.63		6 or less
All behavior statements	8.04	✓	9.02	✓	10.00	✓	10 or less
All teachers working alone	23.44	✓	29.40	✓	26.54	✓	30 or less
All positive interactions	N/A		7.62	✓	6.29	✓	6 or more
All negative interactions	N/A		1.37	✓	.90	✓	2 or less
TOTAL IMPLEMENTATION	10/16		20/23		13/23		number implemented /out of # possible

CHECK column: ✓ = meets criterion
*Math classes will have no students reading aloud.
N/A indicates variables were not used in the fall.

had shown that they could use the identified instructional strategies to the degree that was considered acceptable.

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Attachment A

POSSIBLE OBSERVATIONS

Time Allocation (to be collected every five minutes)

The Snapshot is one efficient method of observing the allocation of time to activities, to materials, and to student groups. The system can be learned by using the enclosed manual. The data can be optically scanned or can be processed by hand. There are simple formulas for computing the percents of time spent by teachers and by students in each activity or grouping. To observe subjects other than reading or math, it is easy to modify the activity categories listed in the left hand column. For instance, the activities which might occur for science would include experiments and demonstrations. This could replace non-reading or non-math instruction on line 09. The materials category at the top of the form for science classes could also be changed.

Teacher Interactions (to be collected throughout the selected class period)

A simple way to collect information on the teacher's interaction patterns is to record on a seating chart each time the teacher speaks to an individual student. The coding can be as follows:

Asks a direct question	= ?
Asks a clarifying question	= ?
Makes a comment	= ✓
Praises or supports a response	= +
Corrects a response	= C
Corrects and guides a response	= CG
Reprimands behavior	= -
Addresses Everyone	= E (at bottom of seating chart.)

These data can help teachers see to whom they are speaking and the nature of the interaction.

Off-Task Behavior (to be collected every five minutes)

Student off-task behavior should be recorded on a separate seating chart. For this information, the observer writes under the student's name box what the off-task student is doing, e.g., waiting, sleeping, staring, talking, sharpening pencil. The class activity which is occurring--in which the student should be engaged is also recorded. These data provide teachers with information by which they can examine the assigned lessons for students who are often off-task to see whether they are too hard or too easy. If many students are off-task the last ten minutes, teachers can also examine their lesson plans to see whether they ought to offer a different activity near the end of the period, e.g., review and summarize the lesson, play a game to reinforce the lesson.

Whatever observation systems are used, they should be objective, have good face validity, be easily trained, and the data easily summarized.

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CLASSROOM SNAPSHOT

The Classroom Snapshot is so named because it records the environment and the participants in the classroom as if they were being photographed at one instant. It records every person in the classroom in the activity in which they are engaged and shows with whom they are engaged. The Classroom Snapshot is coded just before the coding of the Five-Minute Interaction. The distribution of adults and students among the activities which are occurring simultaneously are recorded as the observer placed them on the grid going clockwise around the room. Essentially, the Snapshot provides data to assess the activities occurring, the materials being used, grouping patterns, teacher and adult participation, and students in activities independent of adults.

As shown on the following page, the Snapshot, the classroom activities are listed down the left side of the page, and the materials are listed across the top. The observer records the information in each appropriate circle, recording each unique grouping occurring in the classroom. A completed Snapshot documents the number and kind of groupings, the activity and materials of each group, and whether an adult is present.

The letters at the beginning of each row indicate the placement of each category of participants in the classroom:

T = Teacher
A = Aide
O = Other Adult
i = Independent Student

If it is a team teaching arrangement, show each teacher in the activity with the student or students with whom they are working when the Snapshot is recorded.

The 1, S, L, and E in the rows relate to the number of students with whom the teacher is working:

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SRI CLASSROOM SNAPSHOT

MATERIAL → / ACTIVITY ↓		01 Textbook	02 Workbook Worksheet	03 Test	04 Game/ Manipulative Material	05 Machine	06 Chalkboard	07 Non Curricular Reading	08 No Material
01 Reading Silently	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
02 Reading Aloud	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
03 Making Assignments	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
04 Instruction/ Explanation	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
05 Discussion/ Reviewing Assignments	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
06 Practice Drill	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
07 Written Assignments	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
08 Taking Test Quiz	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
09 Non-math or non-reading Instruction	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
10 (1) Social (A) Inter- (A) action (0)	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
11 Student Uninvolved	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
12 Being Disciplined	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)
13 (T) Classroom (A) Manage- (A) ment (0)	T A O i	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)	(1)(S)(L)(E)

For this Snapshot Only

Number of Adults in Classroom	(0)(1)(2)(3)(4)(5)(6)(7)(8)(9)
Number of Students in Classroom	(0)(1)(2)(3)(4)(5)(6)(7)(8)(9) (0)(1)(2)(3)(4)(5)(6)(7)(8)(9)
Sequence No.	(1)(2)(3)(4)(5)

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1 = One Student

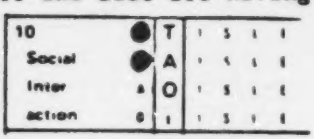
S = 2-10 Students

L = 11 to one less than the total group

E = Everyone.

Similarly, place each aide or other adult on the grid in the appropriate activity and the appropriate group of students. When students are working or socializing and adults are not present, they are recorded on the 1 line of the activity row.

On some occasions, adults are not interacting with students. These adults can be placed in Activity 10 and Activity 13 in the box to the left of the columns (see below). If the T and A are marked in line 10 as shown, we can assume the teacher and aide are having a social conversation:



If an aide is grading papers or cleaning up the room and is not involved with students, the code would be marked as shown below:

At the bottom of the page is a summary of the number of adults and students in the classroom. The sequence of the observation is also marked here. The example shown below indicates that 2 adults and 25 students are present and that it is the second observation in the period.

To determine which activities row or materials column in which to place the participants, the observer must discriminate between the following activities and materials (see Tables 1 and 2). We have prepared operational definitions to specify coding these events.

Table 1

CLASSROOM SNAPSHOT ACTIVITIES

Code	Activity	Description
01	Silent Reading	Students are reading silently to themselves as a group activity or are working on individual assignments. No writing.
02	Reading Aloud	One or more students are reading a section from a play aloud or are reading a section from a book for the class to hear. Reading aloud is usually not done in unison; generally students take turns reading sequential sections from a book. The teacher or the student(s) can also read aloud while the rest of the members of the class follow along in their own texts. If the teacher is present and reading along with students, code this activity on the T line.
03	Making Assignments	An adult is explaining an activity, the procedures to be followed, the amount of work to be finished, or rewards for completing the assignment. The discussion is not focusing on the academic conent, but on the information that students need to carry out the assignment.
04	Instruction	An adult is informing some grouping of students about a subject. Also, one or more students are receiving information or feedback on work they have completed or are being evaluated on their work preparatory to continuing the assignment.
05	Academic Discussion	Academic discussion takes place regarding lecture material, assignments, or problems.
06	Practice Drill	One or more students are verbally involved in reinforcing, repetitive or rote work. This activity must be differentiated from that of category 07, Written Assignments. Students writing verbal material, as in dictation, is also coded practice drill.
07	Written Assignments	One or more students are writing papers, doing computation, or are involved in any other silent written work. If a student is writing and reading, use the Written Assignment activity. Use only workbooks/worksheet materials (02) on this activity.
08	Taking Test, Quiz	One or more students, either as a group or as individuals, are taking a test or quiz about the subject matter.
09	Non-reading Instruction	One or more students are involved in an academic activity whose primary emphasis is not reading.
10	Social Interaction	One or more students, teachers, or aides are interacting about work or subjects other than class-related material.
11	Students Uninvolved	This category is recorded when one or more students are not involved in any activity or are arriving or departing. One or more students are waiting for the teacher in order to begin an assignment or take an exam.

Table 1 (Continued)

CLASSROOM SNAPSHOT ACTIVITIES

Code	Activity	Description
12	Being Disciplined	One or more students are being reprimanded for their behavior or are being sent out of the room for disciplinary reasons.
13	Classroom Management (Teacher Without Students)	One or more adults are alone (without students) performing duties related to the classroom but not directly related to any activity which is occurring at the time of the Snapshot. Examples are a teacher correcting papers at his or her desk, setting up materials for the next class, or arranging books on a shelf. Mark the bubble to the left of the T for teacher classroom management alone, without students.
	Classroom Management (Aides without Students)	The aide is alone without students and involved in classroom management activities. Examples are the aide correcting tests or moving books. Mark the bubble to the left of the A.
	Classroom Management (Adults and Students)	Adults and students are involved in classroom management: moving desks, passing out papers, changing activities, putting away materials, preparing to leave. Mark the bubble inside the activity frame, under "no materials." Even though materials are being handled they are not being used.

NOTE: Classroom Snapshot activites 01-09 reflect academic activities. Activities 10-13 indicate students or adults who are not involved in an academic activity. When completing the Snapshot, adults and students first should be recorded in the activity that has been assigned. Activities 01-09 will be used to record the assigned class class activities. After all students have been recorded, any students who are off-task are recorded in the off-task activities 10-13.

Table 2

CLASSROOM SNAPSHOT MATERIALS

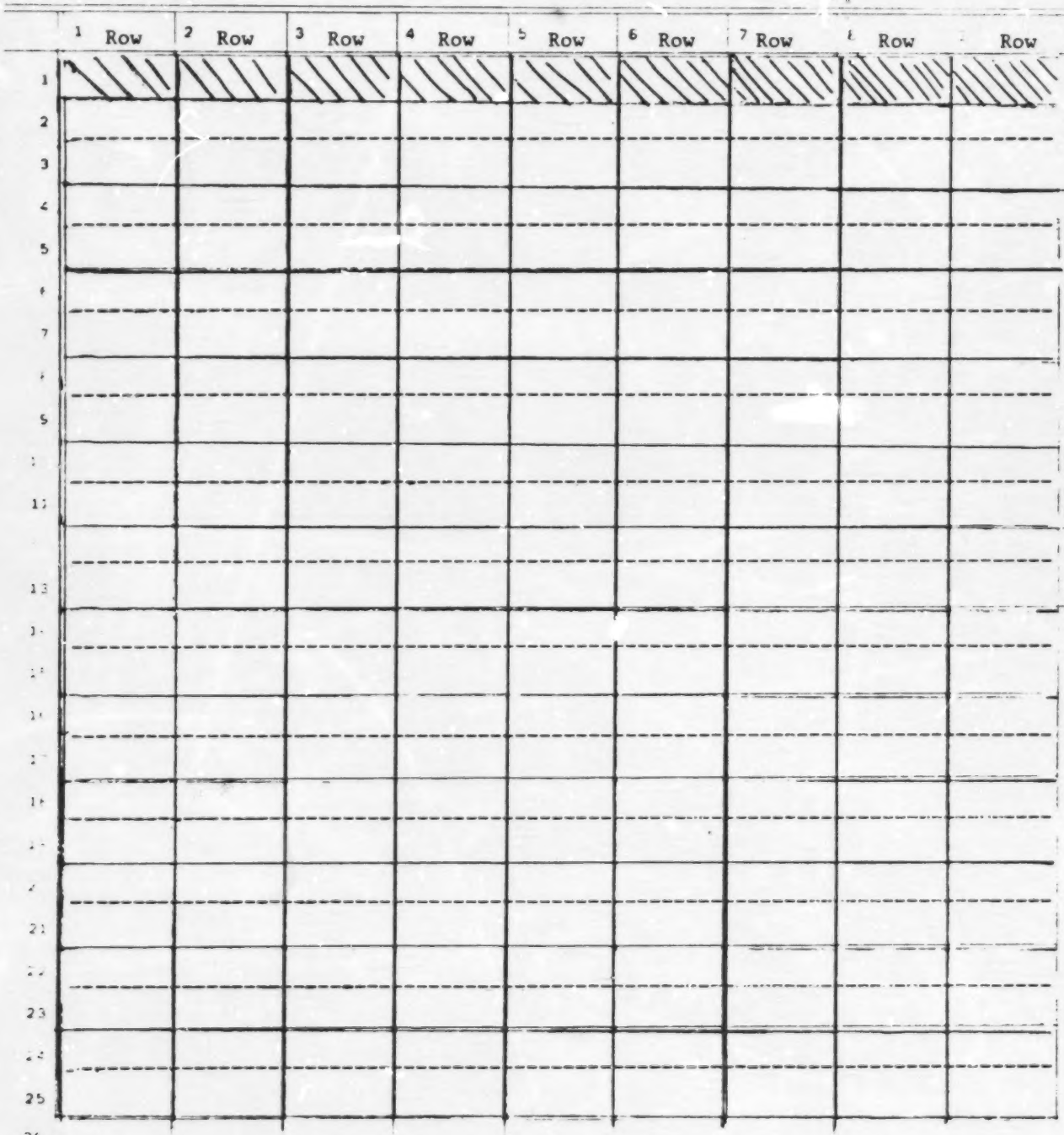
Code	Materials	Description
01	Textbook	This refers to printed materials (which students do not write in directly) specifically designed to instruct through sequential or graduated lessons or chapters.
02	Workbook Worksheet	This refers to consumable materials that students work with to develop concepts or skills. A workbook is distinguished from a textbook in that a workbook contains more emphasis on exercises than on reading. This could be a commercially prepared workbook, a dittoed worksheet, or a blank sheet of paper on which students work problems or write answers. If students are copying work from the chalkboard onto their paper, use this category. This also refers to commercially or teacher-prepared sets of materials, usually in a package, box, or file, that children can be assigned to work in, independent of adults, or weekly readers.
03	Test	This refers to printed materials used specifically for evaluation purposes. It could also include a blank paper on which the child writes test problems or answers.
04	Game/Manipulative Material	This refers to games or manipulative materials that provide practice, drill, or instruction. Any physical object that the student manipulates for learning is included here. Standard classroom materials are not coded (e.g., pencils, crayons, scissors, and erasers). Rulers and compasses are coded here.
05	Machine	This includes machines being used for instruction, for example, film, tape, etc.
06	Chalkboard	When the teacher is writing problems on the overhead or the chalkboard and the students are working on them mentally, this category is used. This category is coded only when no other materials are being used, e.g., when a teacher is writing problems on the chalkboard and children are working them on paper, category 02 (workbook, worksheet), is coded.
07	Non-Curricular Reading	This refers to any reading material which is not specified as part of the regular curriculum of this classroom, such as magazines, comic books, etc.
08	No Material	This is coded when materials are not being used. No Material is always coded with activities 10-13.

Teacher's Name _____

Date _____

Time _____

TEACHER'S INTERACTIONS WITH STUDENTS



When the teacher asks a student a question place a ✓ in the box below the student's name

Place a - in the box when the teacher corrects student behavior.

Place a + in the box when the teacher praises student behavior.

Teacher's Name _____

Date _____

Time _____

ACTIVITY: _____

STUDENTS ON TASK

	1 Row	2 Row	3 Row	4 Row	5 Row	6 Row	7 Row	8 Row	9 Row
1									
2									
3									
4									
5									
6									
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21									
22									
23									
24									
25									
26									
27									
28									
29	Complete a form each 5 minutes.							John L.	
30	Place students' name in rows.								
31	Check students off-task in space below name.							✓	

JANE A. STALLINGS, PH.D.

Founder and Director of the Teaching and Learning Institute

MAJOR RESEARCH WORK:

Follow Through Programs Implementation: 1969-1974

Observation Study of Early Childhood Education in California: 1975-1976

National Home Day Care Observation Study: 1977-1980

Factors Influencing Women's Decision to Enroll in Advanced Mathematics Classes: 1977-1978

Teaching Basic Reading Skills in Secondary Schools: 1977-1978

How to Change the Process of Teaching Basic Reading Skills in Secondary Schools (a teacher training study): 1978-1979

National Diffusion Network--Training Interns to Disseminate the Effective Use of Time Program: 1979

School Policy, Leadership Style, Teacher Change and Student Behavior in Eight Schools: 1980-1982

SELECTED PUBLICATIONS:

"Implementation and Child Effects of Teaching Practices in Follow Through Classrooms", Monograph of the Society for Research in Child Development, Serial No. 163, Vol. 40. 1975.

Learning to Look: A Handbook for Observation and Models of Teaching. Wadsworth Publishing Co., Belmont, CA. 1977

"Allocated Academic Learning Time Revisited, or Beyond Time On Task", Educational Researcher. December, 1980.

"Tips to Principals From Research on Effective Strategies for Teaching Basic Skills in Secondary Schools. Developing Basic Skills Programs in Secondary Schools. Association for Supervision and Curriculum Development, Alexandria, VA. November, 1981.

MAJOR CURRENT PROFESSIONAL ACTIVITIES:

Consulting Editor for Review of Educational Research

Reviewer for Elementary School Journal

Review papers for Division C of AERA, 1976-1981

Member of National Study Groups for Secondary Principals

Member of Seminar of Scholars for Bilingual Instruction

Advisor, Panel for Institute for Research on Teaching

Consultant with the State Departments of Education and local school districts on Staff Development to Improve the Teaching of Basic Skills in Secondary Schools

Provide Staff Development on the Effective Use of Classroom Time to school districts, schools of education and State department personnel

Continued...

November, 1981

MAJOR GOALS:

To examine linkage between administrators, teachers, and students; to facilitate the sharing of current research findings on these overlaps; to form a theory of Effective Schooling; and to translate research findings into useable information for teachers, administrators, and teacher educators.

EDUCATION:

Ball State University:

B.S. in Elementary Education and Science Education

Stanford University:

Ph.D. in Elementary Education and Child Development

SELECTED PUBLICATIONS - JANE STALLINGS

Learning to Look: A Handbook for Observation and Models of Teaching, Wadsworth Publishing Company, Belmont, CA, 1977

"Implementation and Child Effects of Teaching Practices in Follow Through Classrooms," Monographs of the Society for Research in Child Development, Serial No. 163, Vol. 40, 1975

"Effective Teaching and Learning in Urban Schools," in What Do We Know About Teaching and Learning in Urban Schools, Vol. 10, CEMREL, Inc., St. Louis, MO, November 1979

"The Study of Reliability in Observational Data," Phi Delta Kappa Occasional Paper 19, February 1977 (w/Phillip Giesen)

"Follow Through: A Model for Inservice Teacher Training," Curriculum Inquiry, 9:2, 1979

"How to Change the Process of Teaching Reading in Secondary Schools," Educational Horizons, Vol. 57, No. 4, Summer 1979

"Quality of Day Care: Can It Be Measured," in Child Care and Public Policy (Philip Robins and Samuel Weiner, eds.) Lexington Books, D.C. Heath and Company, 1978 (w/Mary Wilcox)

The Teaching Process and the Arts and Aesthetics (ed.), CEMREL, Inc., St. Louis, MO, In Press (w/Gerald Knieter)

"What Do We Know About Individualized Instruction?" in Perspectives on the Instructional Dimensions Study, A Supplemental Report from the National Institute of Education, November 1978

National Day Care Home Study, Observation Component, Final Report for Administration for Children, Youth and Families, DHEW, SRI International, Menlo Park, CA, In Process (w/A. Porter)

How to Change the Process of Teaching Basic Reading Skills in Secondary Schools, Phase II and Phase III, Final Report for National Institute of Education, SRI International, Menlo Park, CA, May 1979 (w/M. Needels and N. Stayrook)

Factors Influencing Women's Decisions to Enroll in Advanced Mathematics Courses, Final Report for National Institute of Education, SRI International, Menlo Park, CA, May 1979 (w/A. Robertson)

Early Childhood Education Classroom Evaluation, Final Report for Department of Education, State of California, SRI International, Menlo Park, CA, November 1977 (w/R. Cory, J. Fairweather, and M. Needels)

SELECTED PUBLICATIONS - JANE STALLINGS (continued)

Follow Through Classroom Observation Evaluation 1972-73, Report to U.S. Office of Education, Stanford Research Institute, Menlo Park, CA, 1974 (w/D. Kaskowitz)

Phase II Instruments for the National Day Care Cost-Effects Study: Instrument Selection and Field Testing, Report for U.S. Office of Child Development, SRI International, Menlo Park, CA, 1976 (w/M. Wilcox and J. Travers)

"What Teachers Do Does Make a Difference," in Perspectives on Education, Addison-Wesley Publishing Company, Reading, MA, 1977

Papers related to the Study of Teaching Basic Reading Skills in Secondary Schools were presented to the following groups:

International Conference sponsored by the International Development Research Center of Ottawa, Canada, held in Paris, France, September 1977
State of California Ad Hoc Committee on AB 3408 (Hart), Culver City, CA, January 1978
Salinas Board of Education, Salinas, CA, February 1978
CEMREL, Inc., St. Louis, MO, February 1978
American Association of Colleges for Teacher Education, Chicago, IL, February 1978
California Association of Compensatory Education, San Diego, CA, March 1978
"Invisible College" for Research on Teaching, E. Lansing, MI, March 1978
American Educational Research Association, Toronto, Canada, March 1978
American Association of Colleges for Teacher Education, Chicago, IL, February 1979
"Invisible College" for Research on Teaching, Menlo Park, CA, April 1979
American Educational Research Association, San Francisco, CA, April 1979
Alameda-Contra Costa Counties School Resource Center, May 1979
Oakland Summer Reading Clinic, July 1979
California Reading Association, San Diego, CA, November 1979
National Reading Conference Pre-Conference Institute, Austin, TX, November 1979

Papers related to the study of Factors Influencing Women's Decisions to Enroll in Advanced Mathematics Courses were presented to the following groups:

American Educational Research Association, San Francisco, CA, April 1979
American Psychological Association, New York, N.Y., September 1979

Papers related to the study of Family Day Care were presented to the following groups:

American Educational Research Association, San Francisco, CA, April 1979
Early Education and Child Development Colloquium, Stanford University, November 1979